

Remarks

Reconsideration of the rejection is requested in view of the above amendments and the following remarks. Claim 3 is amended. New claims 6-10 are added. Claims 1-10 are pending.

Applicants would like to thank the Examiner for the telephone interview conducted on August 10, 2005 with Applicant's representative, James Larson. During the interview, Applicant's representative presented arguments explaining why the claims are patentable over the cited prior art. Detailed arguments are presented below. No agreement was reached concerning the allowability of any claims.

I. Claim amendments

Claim 3 has been amended to improve the form of the claim language.

New claims 6-10 have been added. New claims 6-7 are based on claims 1-2, with claim 6 also reciting that the collision detector includes a deformation rate calculator. New claims 8-10 are based on claims 3-5, with claim 8 also reciting that the collision detectors each include a deformation rate calculator. The language "means" has also been removed from claims 6-10.

No new matter has been added.

II. Claim rejections

Claims 1-5 are rejected under 35 USC 103(a) as being unpatentable over US 6,113,138 to Hermann et al. (Hermann), US 6,216,070 to Hayashi et al. (Hayashi) and US 6,125,313 to Watanabe et al. (Watanabe). Applicants respectfully traverse the rejection.

A. Claims 1-2

The invention recited in independent claim 1 is not taught or suggested by the combination of Hermann, Hayashi and Watanabe.

Hermann, Hayashi and Watanabe do not disclose a plurality of acceleration sensors for mounting to a front portion of a vehicle. In Hermann, a single acceleration sensor 2 is disclosed in Figure 1 as being mounted in a front half of a vehicle. The

illustrated position of the sensor 2 is well behind the front portion of the vehicle. In Figures 2 and 3 of Hermann, plural acceleration sensors 21, 22 are disclosed. But the sensors 21, 22 in Hermann are mounted either in the rear half of the vehicle (Figure 2) or in the front half (Figure 3) well behind the front portion of the vehicle. Hayashi is silent about the location of the sensors 109, 111. In addition, Watanabe discloses a single sensor and is silent about its location.

In addition, Hermann does not disclose an actuation permitting means for outputting an actuation permitting signal for a fixed time period when one of the acceleration sensors detects an acceleration equal to or more than a set value within a set time after another acceleration sensor detects an acceleration equal to or more than the set value. The rejection refers to column 7, line 50 to column 8, line 17 of Hermann as allegedly teaching this feature. In addition, during the telephone interview, the Examiner pointed specifically to column 7, lines 56-58. However, the cited passages of Hermann do not disclose outputting an actuation permitting signal for a fixed time period when a sensor detects an acceleration of sufficient magnitude within a set time after another sensor detects an acceleration of the sufficient magnitude. There is no disclosure that any signal in Hermann that could possibly relate to an actuation permitting signal is output for a fixed time period, or outputting an actuating permitting signal within a set time after another sensor detects an acceleration equal to or more than the set value.

Column 7, lines 56-58 of Hermann has nothing to do with the timing recited in claim 1. The actuation permitting means holds for a set time period a signal when an acceleration signal having a value equal to or greater than a threshold value is input from one of the acceleration sensors. During this set time period, when an acceleration signal equal to or greater than the threshold value is input from another acceleration sensor, the actuation permitting means outputs an actuation permitting signal for a fixed time period. With this construction, it is possible to prevent an actuation permitting signal from being issued when a signal equal to or greater than the threshold value is accidentally input from one acceleration sensor due, for example, to malfunction.

Hermann does disclose that one of the evaluated acceleration signals can act as an enabling or disabling signal for the other evaluated acceleration signal (column 8, lines 5-10). The exact meaning of this passage and whether it relates to an actuation permitting

means as recited in claim 1 is not clear to Applicants, as there is no further explanation of this feature in Hermann beyond this passage. There is certainly no mention of time being a factor for the disclosed enabling or disabling signal. Nor is there any mention of outputting an actuation permitting signal when one of the sensors 21, 22 detects acceleration equal to or more than a set value within a set time after the other sensor 21, 22 detects acceleration equal to or more than the set value. Again, there is no mention in Hermann of time being a factor with respect to the operation of the sensors 21, 22. Further, Hermann appears to be silent as to whether the sensors 21, 22 are set-up to operate based on the same set value of acceleration.

Also, Hermann does not disclose an actuating signal outputting means for outputting an actuating signal to the collision mitigating devices when receiving both an actuation permitting signal from the actuating permitting means and a collision detecting signal from the collision detecting means. This arrangement further reduces the chance of malfunctioning of the collision determination system.

The rejection suggests that Hermann does disclose an actuating signal outputting means that receives an actuating permitting signal and an impact detecting signal, and refers to column 7, lines 31-49 to support that assertion (see bottom of page 2 of the office action). The assertion is not accurate.

The rejection specifically indicates that Hermann does not disclose collision detecting. As a result, since Hermann does not disclose collision detecting, Hermann cannot disclose a collision detecting signal or an impact detecting signal as alleged in the rejection. There is no reference in Hermann to the use of an impact detecting signal as alleged. This is confirmed from a review of Figure 5 of Hermann, which shows that the evaluation device 3 only receives signals from the acceleration sensors 2, 11, 12, 21, 22. There is no disclosure in Hermann that differing signals in the form of an actuation permitting signal and a collision detection signal are at any time produced or provided to the evaluation device 3, or that the evaluation device 3 outputs an actuating signal based on input of both an actuation permitting signal and a collision detection signal.

In the telephone interview, the Examiner suggested that Hermann does teach collision detecting, and referred to column 2, line 25 for support. Even if Hermann does teach collision detecting, Hermann does not teach a combination of a collision detecting

means for outputting a collision detection signal and an actuation permitting means. Moreover, this is a new interpretation of the Hermann reference that differs from the rejection in the office action. Applicants submit that reliance on this new interpretation to support a rejection would require that the rejection be made non-final.

Hayashi does not remedy the deficiencies of Hermann. Hayashi is relied upon to teach collision detecting for outputting a collision detection signal. Without conceding that Hayashi actually teaches a collision detecting means as claimed, there is no teaching or suggestion to combine Hayashi with Hermann.

Applicants note that the system in Hayashi is based on the operation of two acceleration sensors 109, 111, where the sensors are arranged so that their sensing directions differ by 180 degrees, i.e. both sensors would not detect longitudinal accelerations as claimed (see, for example, column 6, lines 14-19). Hayashi does not teach using the signals from the acceleration sensors for anything other than for what they refer to as collision detection. Neither Hermann nor Hayashi teach using detected acceleration for both an actuation permitting means and a collision detecting means. As a result, since Hermann does not teach collision detection, there is no teaching in the references to utilize the teachings of Hayashi in the system of Hermann. Furthermore, incorporating the teachings of Hayashi in Hermann would mean replacing the Hermann sensors and how those sensors are used with the Hayashi sensors and how those sensors are used.

There is no teaching in Hermann of using both an actuation permitting means together with a collision detecting means. Therefore, there is no teaching in Hermann to turn to the system of Hayashi for a collision detecting means, and there is no teaching in Hermann or Hayashi to combine both an actuation permitting means and a collision detecting means. The only teaching for utilizing both an actuation permitting means and a collision detecting means as claimed comes solely from Applicant's own disclosure, which is impermissible hindsight.

Watanabe is characterized as teaching a plurality of timers, each timer being associated with a respective one of the acceleration sensors. Watanabe discloses an air-bag control circuit that utilizes a single accelerometer or G sensor unit 100 (column 5,

lines 44-45). Included within the circuitry are first and second timers 124, 126 (column 5, lines 64-65).

Contrary to what is stated in the rejection, Watanabe does not teach each of the timers being associated with a respective one of the acceleration sensors. Since Watanabe does not teach a plurality of sensors, Watanabe cannot teach each timer being associated with a respective one of the sensors.

Therefore, even if the teachings of Watanabe are combined with Hermann, the result would be first and second timers associated with a single one of the sensors in Hermann, as taught by Watanabe.

For at least these reasons, claim 1 is patentable over Hermann, Hayashi and Watanabe. Claim 2 depends from claim 1 and is patentable for the reasons given for claim 1 and need not be separately distinguished at this time. By not separately addressing claim 2, Applicants are not conceding the propriety of the rejection thereto.

B. Claims 3-5

The invention recited in independent claim 3 is not taught or suggested by the combination of Hermann, Hayashi and Watanabe.

Hermann, Hayashi and Watanabe do not disclose a plurality of acceleration sensors for mounting to a front portion of a vehicle, as discussed above in detail for claim 1. In summary, the sensors in Hermann are not mounted to a front portion of the vehicle. Hayashi is silent about the location of the sensors 109, 111. In addition, Watanabe discloses a single sensor and is silent about its location.

In addition, Hermann, Hayashi and Watanabe do not disclose a plurality of collision detecting means. As acknowledged in the rejection, Hermann does not disclose collision detection. Hayashi is said to teach a plurality of collision detecting means. However, that is not accurate. Hayashi teaches a single collision judging means 110. Hayashi does not disclose the use of a plurality of collision judging means, nor disclose how to implement a plurality of collision judging means in his system. Likewise, Watanabe does not disclose a plurality of collision detecting means. Therefore, even if these references are combined, the invention recited in claim 3 does not result.

In addition, Hermann, Hayashi and Watanabe do not disclose an actuating signal outputting means for outputting an actuating signal when determining that any of said collision detecting means detects a collision and any of said acceleration comparing means referring to one of said acceleration sensors, which is different from the acceleration sensor referred to by said collision detecting means detecting the collision, has detected an acceleration equal to or more than the set value during a predetermined past time period before the collision detection. In claim 3, in order for the actuating signal outputting means to output an actuating signal, the acceleration sensor referred to by the collision detecting means detecting the collision is different than the acceleration sensor referred to by the acceleration comparing means that detects an acceleration equal to or more than the set value.

In Hermann, the actuating signal that is output to trigger the protection device 51 is not based on a collision detected by one acceleration sensor and an acceleration comparing means that refers to a second acceleration sensor. Hayashi and Watanabe are likewise silent about this feature.

Not only does claim 3 recite different acceleration sensors, but the acceleration comparing means must detect an acceleration equal to or more than the set value during a predetermined past time period before the collision detection. Hermann, Hayashi and Watanabe do not teach that the acceleration detection occurs in a predetermined past time period before collision detection.

In addition, Watanabe is characterized as teaching a plurality of timers, with each timer being associated with a respective one of the acceleration sensors. As discussed above for claim 1, Watanabe discloses a single acceleration sensor and does not teach each of the timers being associated with a respective one of the acceleration sensors. Since Watanabe does not teach a plurality of sensors, Watanabe cannot teach each timer being associated with a respective one of the sensors.

For at least these reasons, claim 3 is patentable over Hermann, Hayashi and Watanabe. Claims 4 and 5 depend from claim 3 and are patentable for the reasons given for claim 3 and need not be separately distinguished at this time. By not separately addressing claims 4 and 5, Applicants are not conceding the propriety of the rejections thereto.

III. New claims 6-10

New claims 6-7 are patentable over the cited art for similar reasons as discussed above for claim 1. In addition, Hermann, Hayashi and Watanabe do not teach a collision detector that includes a deformation rate calculator.

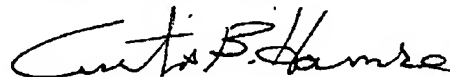
New claims 8-10 are patentable over the cited art for similar reasons as discussed above for claim 3. In addition, Hermann, Hayashi and Watanabe do not teach collision detectors that each include a deformation rate calculator.

IV. Conclusion

In view of the above, Applicants believe that the claims are allowable. Favorable reconsideration in the form of a Notice of Allowance is requested. Any questions or concerns regarding this communication can be directed to the undersigned attorney at (612) 455-3800.

Respectfully Submitted,

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